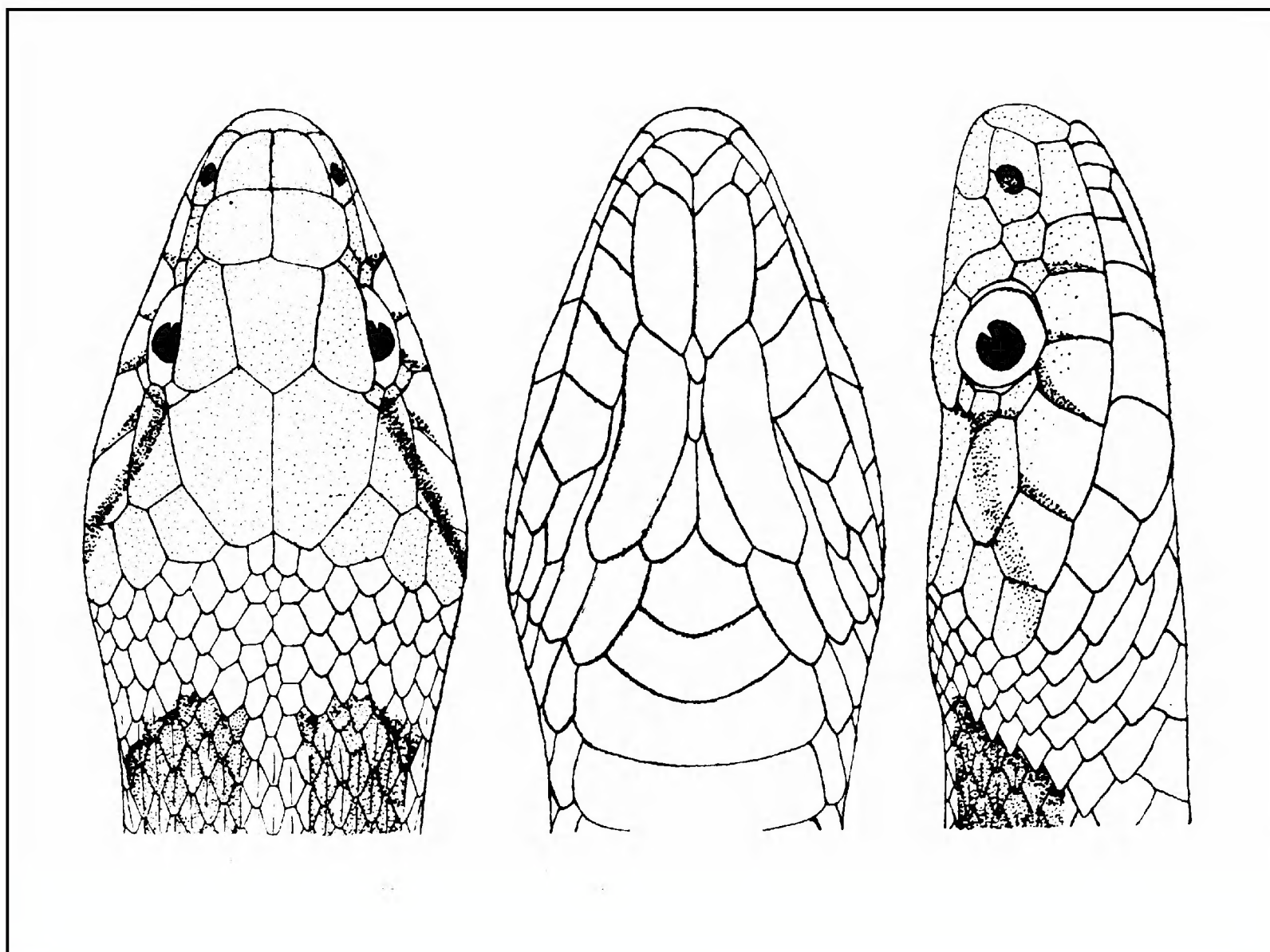

BULLETIN

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Chicago Herpetological Society



Volume 44, Number 9
September 2009



BULLETIN OF THE CHICAGO HERPETOLOGICAL SOCIETY

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Anomalous Scutellation in an Eastern Garter Snake, *Thamnophis sirtalis sirtalis*, from Erie County, Pennsylvania

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On 19 June 1998, at a site in West Springfield, Erie County, Pennsylvania (N41.93623°, W80.50182°, datum WGS 84), I found a gravid female eastern garter snake (*Thamnophis sirtalis sirtalis*), that was 560 mm snout-vent length. The snake lacked a vertebral stripe and had a considerable amount of melanin deposition on the dorsal, lateral, and vertebral surfaces, but was not a fully melanistic individual. The specimen was collected to obtain a shed skin, and data regarding litter size, mass, and sex ratio of the resulting neonates. The specimen shed its skin 24 June 1998. Upon examining the shed skin with a stereo microscope at 20× and 50× magnification, it was noticed that there were keratinized nubbins between some scale rows (Figure 1). The nubbins were only found at midbody (ventrals 46–118), and only from above dorsal scale row 3 to the vertebral row; however, they were most numerous between dorsal scale row 6 and the vertebral row. These nubbins were also evident on the actual snake.

Of 92 *T. s. sirtalis* shed skins examined, the condition described above was only observed in this one specimen. Extra

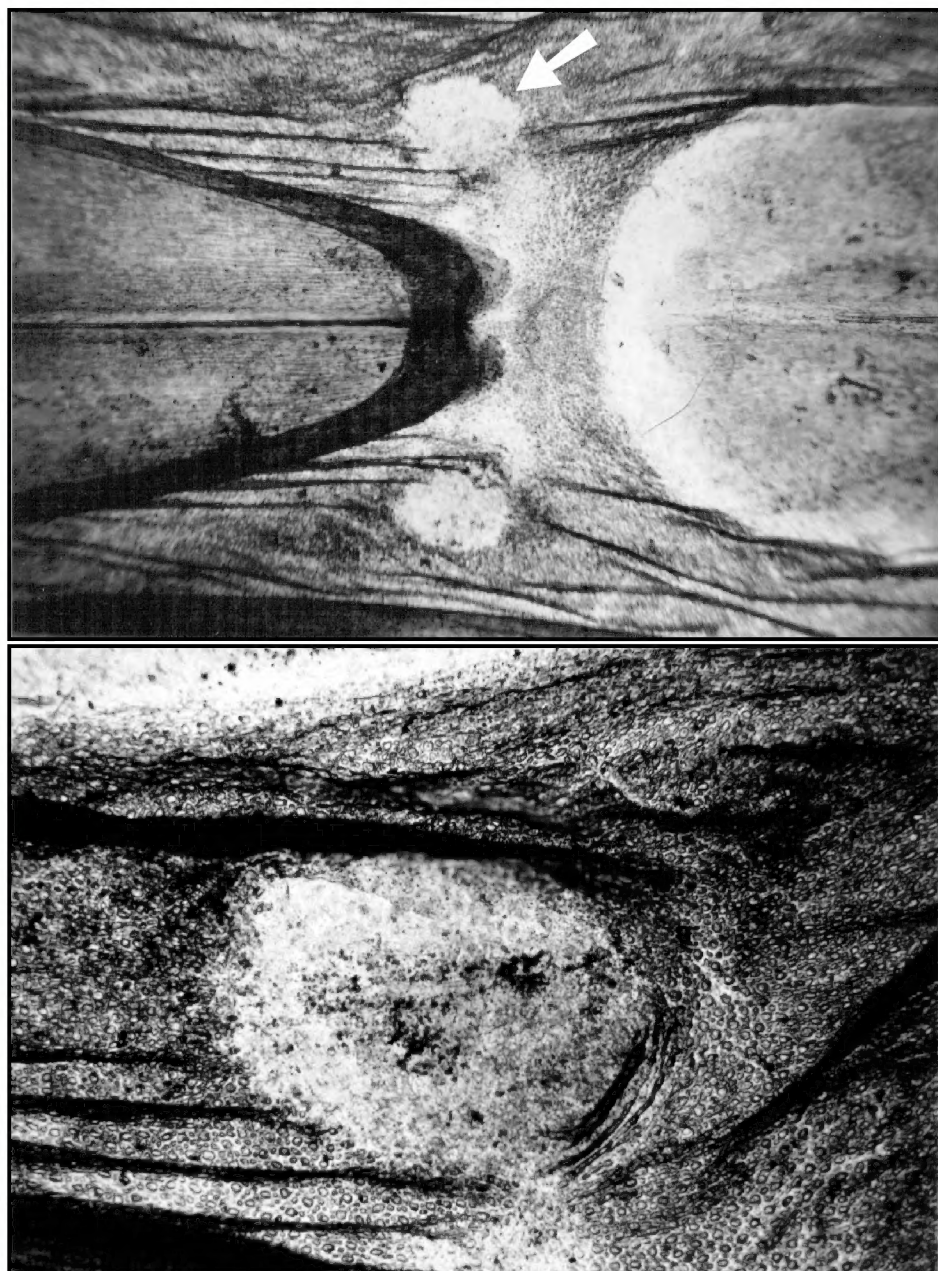


Figure 1. Top) Photomicrograph (20×) of keratinized nubbins from a shed skin of a female *Thamnophis sirtalis sirtalis*. Arrow indicates nubbin located between dorsal scale row 9 and the vertebral scale row. **Bottom)** Photomicrograph (50×) of keratinized nubbin from the same female *T. s. sirtalis*.

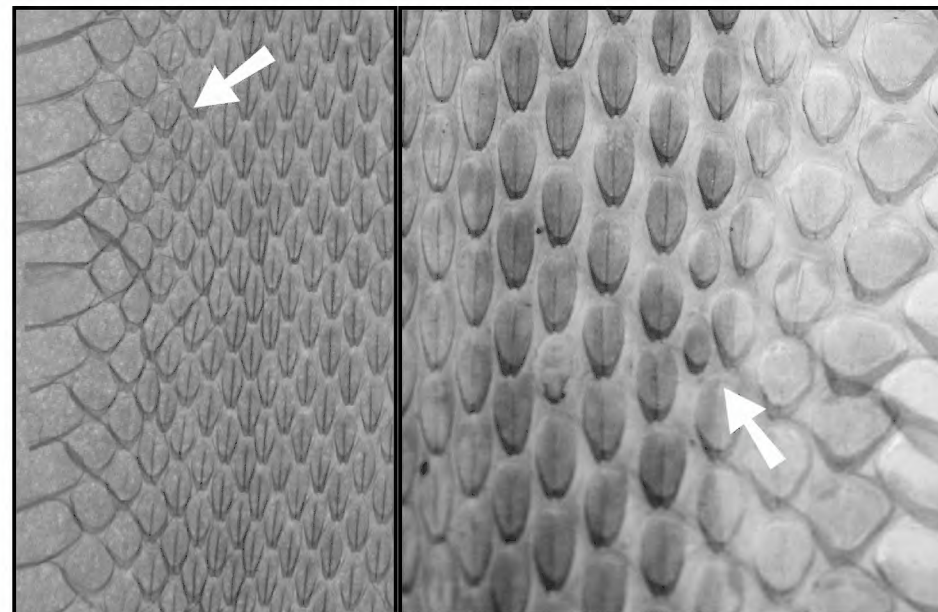


Figure 2. Extra scale row in a shed skin of *Storeria d. dekayi* (left); partial scale row due to scale row reduction observed in a *Thamnophis s. sirtalis* shed skin (right).

scales and partial scale rows are occasionally present in numerous snake species, including *T. s. sirtalis* (Figure 2). However, the nubbins observed here are not fully developed scales, and more closely resemble small irregular ovoid scales observed in merolepid (partially scaleless) *T. s. sirtalis* (Figure 3) (Gray et al., 2001).

Scale anomalies such as merolepidosis appear to be a simple Mendelian homozygous recessive trait (Zug et al., 2001). The significance of the structures described above is not evident. More study is needed to determine if these keratinized nubbins are inherited, and if so, are they congenital or do they develop

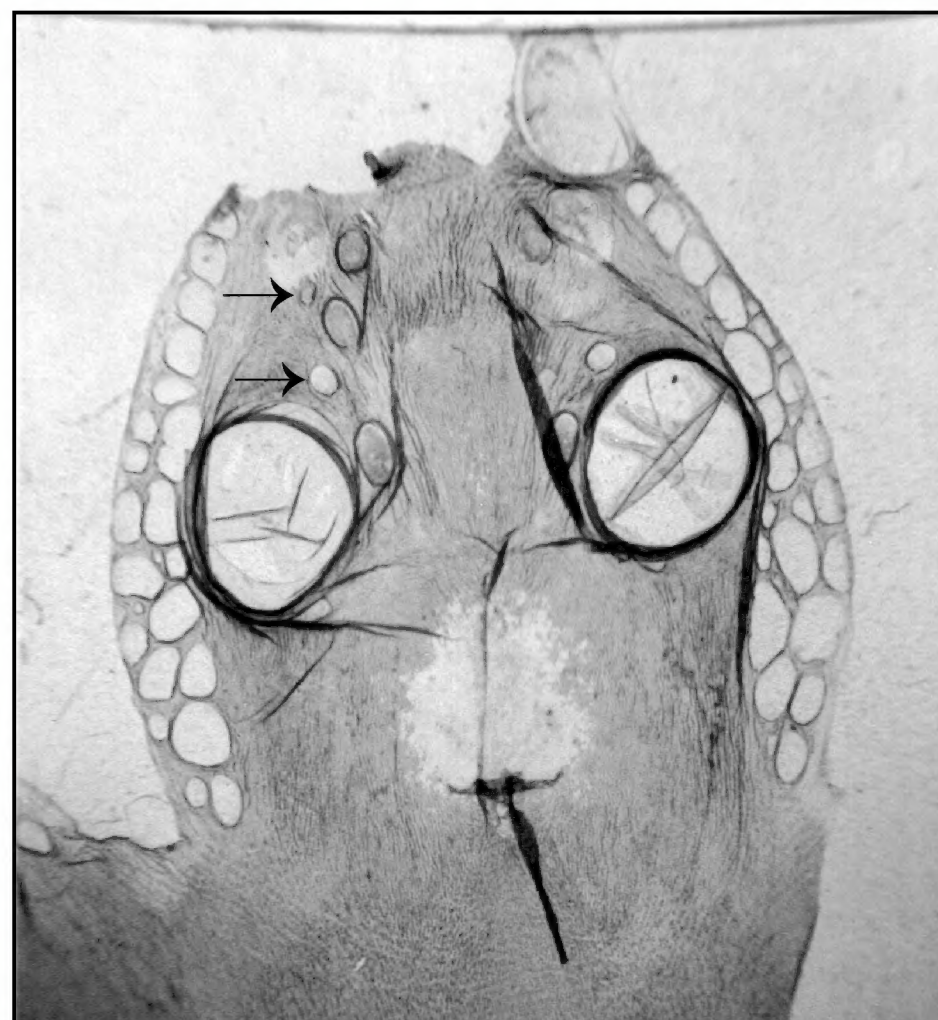


Figure 3. Cephalic portion of a shed skin from a merolepid *Thamnophis s. sirtalis*; note the small ovoid scales (nubbins) indicated by arrows.

ontogenetically?

On 22 July 1998, the specimen had a litter that contained 33 neonates (19 males:14 females). All neonates had normal pigmentation and scutellation. It is possible, however, that

nubbins in neonates are too small to observe at low magnifications (~50×). The female and neonates were released at the site of capture following data collection. Sections of the female's shed skin are in my personal collection (BG 054).

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Bull. Chicago Herp. Soc. 44(9):138-139, 2009

Captive Longevity and Size Records for the Peninsula Newt (*Notophthalmus viridescens piaropicola*) and Striped Newt (*Notophthalmus perstriatus*)

Mark P. Wallace, Sr.¹, Dirk J. Stevenson*² and Linda V. LaClaire³

Abstract

Herein, we report longevity and size records for the eastern newt (*Notophthalmus viridescens*) and a longevity record for the striped newt (*Notophthalmus perstriatus*), based on observations of wild-captured specimens kept in captivity.

On 20 June 1991, the senior author (MPW) captured an adult female (paedomorph at time of collection) peninsula newt (*Notophthalmus viridescens piaropicola*) 26.7 km south of Lake Cypress on State Road 523 (just south of St. Cloud), Osceola County, Florida, USA. The newt was dip-netted from a vegetation-choked, semipermanent roadside ditch. As of 1 August 2009 this specimen was still alive in the personal collection of MPW. We measured this newt on 1 August 2009 by holding it upside down, then aligning and gently extending it beneath a transparent ruler. We recorded the following: snout-vent length ([SVL], to the posterior tip of the vent) = 73 mm; total length (TL) = 154 mm (Figure 1).

This *N. v. piaropicola* has now lived in captivity for 18 yr, 1 mo. This specimen has been maintained in an aquarium at room temperature (21 °C) and fed Reptomin® floating food sticks and flake fish food. Assuming this animal was ca. 1 year old when collected (see Harris, 1987), it is now 19+ years old. Maximum ages reported for wild *N. viridescens* vary from 9 to 15 years (Caetano and LeClair, 1996; Forester and Lykens, 1991; Gill, 1978, 1985 [note: all of these studies address *N. v. viridescens*]). Gill (1978, 1985) reported maximum longevity of 15 and 12 years for male and female *N. v. viridescens*, respectively, for his Virginia, USA study population.

Remarkably, the size attained in captivity by this *N. v. piaropicola* exceeds not only the maximum size documented for this subspecies (105 mm TL [Conant and Collins, 1991]) but also the maximum size reported for the largest of the eastern newt subspecies, *N. v. viridescens* (54 mm SVL [Petranka, 1998]; 140

mm TL [Conant and Collins, 1991]).

On 26 August 1991, LVL captured a larval male striped newt (*Notophthalmus perstriatus*) at an isolated depressional wetland in Putnam County, Florida, USA. At the time of capture, this newt measured 25 mm SVL and 58.7 mm TL. The collection site, designated Recess Pond, was 4.8 km south of State Road 26 at Melrose, Florida, and 0.4 km east of State Road 21 (LaClaire, 1995). The newt (a metamorphic adult ca. 32 mm SVL and 63 mm TL at time of death) was maintained in captivity in the personal collection of LVL. It died on 20 May 2008 at an age of 17+ years, and was subsequently deposited in the

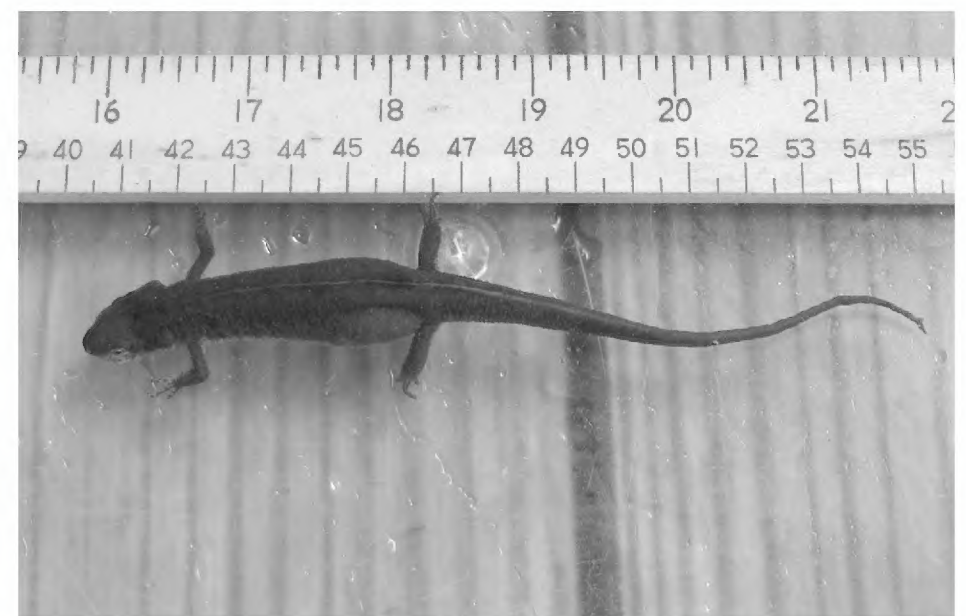


Figure 1. Record-sized peninsula newt, *Notophthalmus viridescens piaropicola*, (adult female, SVL 73 mm; TL 154 mm) captured June 1991 in Osceola County, Florida, USA, and still alive in the personal collection of the senior author. Photographed 1 August 2009 by Mark P. Wallace, Sr.

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University of Florida Museum of Natural History herpetology collection (UF 155817), Gainesville, Florida, USA. This *N. perstriatus* specimen significantly exceeds the maximum captive longevity reported for the species, 11 yr, 2 mo. (Grogan and Bystrak, 1973; note: Dodd et al. [2005] questioned the veracity of the Grogan and Bystrak record because of the large size [105 mm TL] of the specimen and the fact it was purchased in Maryland).

Long lifespans of North American newt species, including *Notophthalmus* spp., may safeguard populations from unfavor-

able environmental conditions and other factors that adversely affect reproduction. Due to stochastic events (e.g., drought), breeding pond characteristics, and populations of prey species as well as predators/competitors, production of juveniles at many newt breeding sites is highly episodic (Dodd, 1993, Semlitsch et al., 1996).

Acknowledgments

We thank Steve A. Johnson for reviewing the manuscript and Kevin M. Enge for assistance in locating pertinent literature.

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Can You Really Tell the Age of a Turtle from Its Growth Rings?

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This last spring I found another of the marked turtles. By her shell notches I knew she was number 86. I weighed and measured her, counted the growth rings on one of the plastral scutes, and then photographed and released her. Several days later I compared the information recorded against the original data sheet. Since she was first caught and marked in 1975 this box turtle had been recaptured five times, each time within 50–100

yards of where I first found her. She showed no growth. In the 1970s she had 23 growth rings, last spring she still had 23 rings. How old was this turtle? She was already full grown in 1975 so clearly the growth rings provided no clue then or now. Like many of the previously marked adult turtles I recaptured minimally she was probably in her 50s, but she could be much older. The funny part was that none of these individuals looked partic-

ularly old, they were just standard issue adults.

Everyone knows turtles can live a very long time. When asked how long turtles actually live, I generally answer: “About the same as people, with the lucky ones living even longer.” In truth, different species can survive to different ages. Some captive tortoises are documented to have lived up to 175 years and there are reports suggesting a few may live even longer. The problem is that the turtles and tortoises outlive the people keeping the records, and typically there is some confusion when someone later tries to determine the precise age of really old individuals. Ages of 50, 75, and 100 years, determined by methods other than growth ring counts applied to populations under long-term statistical studies, do not seem to be that unusual for a number of our native turtles.

The idea of using growth rings to find the age of turtles goes back to Louis Agassiz (1857), who first proposed the method in his classic monograph *North American Testudinata*. Counting the rings is convenient, and does not require long detailed studies and multiple recaptures of the same turtle over time. The math is simple, and the method is not destructive to the turtle. But does it work?

There are literally hundreds of published scientific studies that have made use of the number of growth rings for estimating the age of turtles. These academic studies have sort of fed on themselves, with researchers citing the fact that previous authors had determined the age structure of this or that species or population by counting the rings. Nevertheless, when you actually read the literature being cited, there are all sorts of cautionary statements suggesting that detailed studies have never proven that the rings are laid down on an annual basis.

Many people still believe the growth rings that can be found on the turtle’s shell are an indication of age. Like the cross section of a tree the rings can be counted, with each one indicating a year’s growth. Although a number of people have questioned the accuracy of this method, it is still popularly believed to work. The terminology does not help. The ridges on the scutes are often, and correctly, referred to as “growth annuli.” The singular of annuli is annulus. Both forms of the word are easily confused with *annuālis*, the Late Latin word for “yearly” and the basis for our English word annual. But in fact the doubled “n” in annulus resulted from a medieval misspelling of the Latin *ānulus*, meaning ring. And, as a further point of interest, *ānulus* is a diminutive version of the Latin *ānus*. Thus, it seems quite appropriate to use the English version of the latter word, or its colloquial counterpart, for individuals who insist that they know the exact age of a particular wild-caught turtle.

So what’s with these rings? The outer surface of a turtle’s shell is covered with scutes, scales formed of dead keratinized tissue. As turtles grow each scute expands from its edges with the interface between new and old material forming rings. It is believed that annual spurts of growth, followed by periods of dormancy produce rings. If this is so, then when the rings in any individual scute are counted a turtle’s age is revealed.

The seams between the scutes form along grooves in the underlying bony shell. The growing outer edges of the individual scutes occur along these seams. Hatchling turtles have no

growth rings, and the scutes that they have at hatching remain as the distinct areolae in the raised centers of the older turtles’ scutes. Captive turtles fed on quality diets and with substantial amounts of food will show new seams that are wider and often different in color than adjacent areas toward the center of the scute. The rings form when growth slows or temporarily stops during periods of drought or during hibernation, or in the tropics some turtles that are unable to bask regularly during the rainy season actually stop growing. This is the basis of the logical concept that turtles will produce one growth ring annually.

Unfortunately it’s not that simple; it gets more confusing. During periods of slow growth a thin layer of the epidermis may become keratinized. This forms a slight depression in the scute that appears as an incomplete wrinkled ring. It can be often be difficult to distinguish the difference between the rings formed from new growth and those formed by depressions. These false rings have been termed differently throughout the literature — sub-annual rings, accessory lines, minor growth rings, and pseudoannual growth zones. Some of these terms indirectly imply that the “true” rings are annual. For people who just casually try to count rings to age turtles, distinguishing the two types of rings can be challenging and two or three people counting rings on the same turtle often come up with quite different numbers.

Additionally, some turtles shed their scutes as their shells grow. Sliders, cooters and painted turtles are familiar North American turtles that grow this way. Rings are left when the when the old outer keratin layer is shed as the new layer expands from below. The impressions of the rings remain for indefinite periods of time, but surely the total number of visible rings does not represent the actual age of the turtle. A number of turtles have very rough scutes with numerous ridges. Growth rings are difficult to distinguish on these turtles with rugose scales (in North America; chicken turtles and many of the sliders).

There are any number of situations where common sense tells us that counting growth rings could not possibly tell us anything. In tropical climates where there are no seasons growth should be uniform. One could argue that wet and dry seasons could have the same effect on seasonal spurts of shell growth, but would this really affect most aquatic species? Turtles in captivity and housed in controlled environments indoors and fed consistent diets should not produce any rings; but they do. Marine turtles that seasonally migrate would tend to buffer any climatic situations that would produce rings on an annual basis, but adults and sub adults have such smooth shells that growth rings are not apparent anyway. And of course soft-shell turtles and leatherbacks lack shell scutes altogether. So clearly this is not a system of age determination that will work for all species.

To demonstrate that growth rings actually indicate age one could begin with hatchling turtles and in either wild or natural captive conditions follow the development of rings over a number of years, or recapture wild turtles over time and see if the number of additional rings actually matches the number of years between encounters. Studies such as this have been done but the results are mixed. In independent studies ranging from one

to 37 years researchers have tried to test the use of growth rings for age determination but in some cases it is not actually clear how they arrived at their results. In a number of different studies on various species the number of rings often corresponded to the number of years but not on every turtle. Exact matches of years elapsed and new ring numbers ranged from 29 to 61% in turtle populations studied. Many studies found the counts were reliable only for young turtles, but a few thought they revealed actual ages up to the time of sexual maturity. Frequently turtles added more than one ring in a year, and in one case up to six new rings were added in one year, but even this was not consistent. A few researchers stated outright that the method was unreliable or that the variability in how different people counted the rings made the information useless.

Some of the results were surprising. Adults of some turtles had minimal growth during reproductive periods as they used up their energy for reproductive activities. Some tropical species had no persistent pattern to their seasonal growth with individual turtles adding 3 to 4 new rings a year. In desert tortoises the formation of growth rings increased with the increase in total annual precipitation. While turtles and tortoises often add on more than one new ring a year, when forage is sparse young tortoises may show no growth and no new rings are added. For biologists who like to show neat patterns in nature all this is maddening. There is no clear answer. Different sites, species, age groups of the same species, and weather extremes all influence the number of rings. While for some species the system almost works, you can't count on it. Each situation would need to be examined independently to even use the growth rings to make meaningful estimates of a turtle's age.

The problems are compounded because as turtles grow older these rings wear down, and as they reach adult size growth slows and the rings form so closely together they cannot be individually distinguished. Thus, while counting rings may give a good age approximation on young turtles (usually those under 10 years) it is not necessarily accurate. On bog turtles that burrow in mucky soils that contain some gravel their shells look like polished stones.

A logical question would be: Are these rings actually related to age or do they simply reflect the growth and size of an individual turtle? There have been some studies on this, but as one might guess, size and age are related and teasing them apart is not simple. On a small number of species where growth ring counts were used to predict size and age it was shown on some turtles the rings best predicted size, on others it predicted age, and on most it was not particularly good for either. Most of the research has been on wild populations or on captive ones maintained in enclosures mimicking natural conditions. This would be an interesting topic for someone rearing captive-bred turtles of known ages under controlled captive conditions. Would feeding different amounts to turtles consistently cause the

growth rings to be further apart, appear more frequently, or both? Based on what is now known, I suspect different types of turtles would each respond differently. But who knows?

So how old is a particular turtle? There is really no way to tell. Counting 23 rings tells you little more than the obvious—that this particular turtle has 23 growth rings. A smooth shell, or at least one where the growth rings are too close together to accurately count or are no longer visible, and long healed over scars from sundry encounters are all signs of age. They are as telltale as our gray hair, wrinkled skin and liver spots. If it looks old, it probably is, and if it doesn't, it still might be. From my backyard box turtle study I find many of the turtles originally marked in the 1970s remain viable, and an important part of the population. Working with various statistical techniques it is clear that over 50% of the current adult population is 50 years of age or greater. Once the young turtles reach near adult size their chances of living on for decades are very high. These ages are based not on ring counts but the recapture and measured growth of turtles originally marked and released 30 years ago. Most were already adults when first captured and show very little if any growth during this time period. I have such time scattered data that as of now I have not even entered all of it into the computer programs that will model the age structure of the population, but in similar studies researchers predicted that box turtles regularly exceeded 100 years of age. Many of the turtles hatched not just before personal computers were available, but before TVs, interstate highways, and tab top beer cans.

The age factor of course is the key to everyone's conservation concerns over habitat loss and the commercial exploitation of turtles taken from the wild. With a significant percentage of the total population consisting of old adults, turtles do not quickly rebound from even modest harvest. The old adults are still reproducing, and they are the individuals that have learned to cope with all of man's foolishness. They are what carry the population over time, weather in a pristine setting, or a small isolated wetland sandwiched within a housing development. Removal of even a few turtles, whether from road mortality, or harvest for the food or pet trade breaks the balance. In stressed habitats the problems only surface quicker. The paradox is that because turtles live so long, even decades after a local population has collapsed old individuals can be found walking about, and to the uninformed it appears that these populations are still viable. The average box turtle you encounter is very likely to be older than you are, and a surprisingly large percentage may be older than your grandparents. They deserve respect, and should be left to enjoy time, the summer shade of a wooded glen, tasty mushrooms and slimy slugs.

“... fitted to endure, for he outlives twenty French dynasties. One turtle knows several Napoleons.” – Henry David Thoreau, 1856

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What You Missed at the August Meeting

John Archer
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“... one of the iguanas in the back with a big fibrous osteodystrophy, the big swollen jaws as a result of secondary nutritional hyperparathyroidism.”

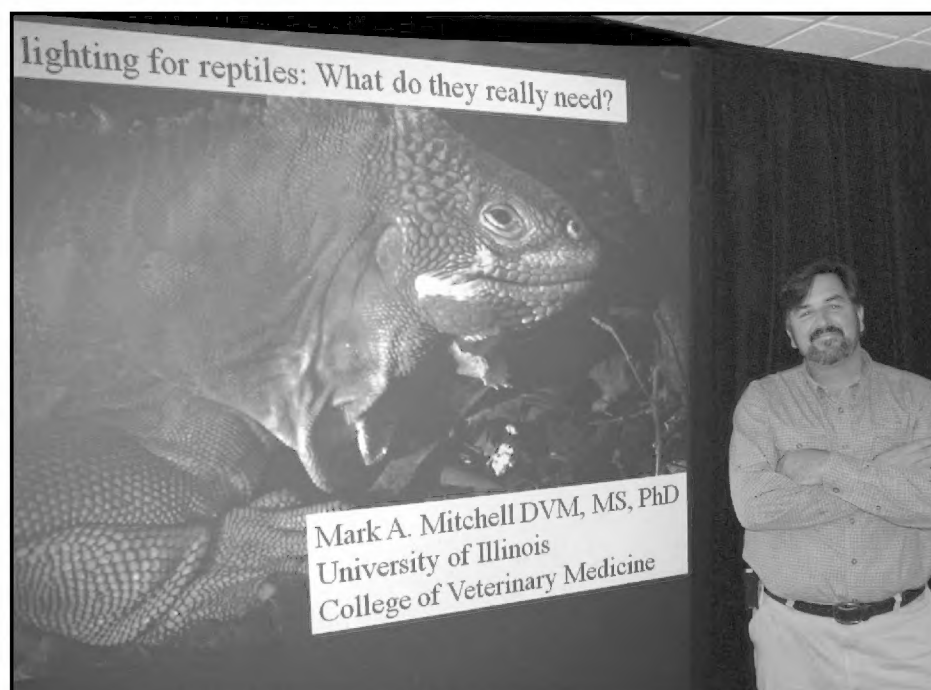
Said with what I think was an Arnold Swarzenegger accent. At first high pitched: “Oh! Little girly mammals. Oh! I have a one hundred point two. I’m so feverish. I cannot move or do anything.” Then low: “Not like the hulking iguana. Myself can withstand the 45-degree temperature change. I’m not girly! The mammals should be wiped out!”

The two quotes are not related in any way save for the fact that Mark Mitchell uttered both during his presentation at the August general meeting. If you attended the September 2008 meeting I’m sure that you remember him, but if you don’t, here’s the short bio I wrote for the *Bulletin* (Bull. Chicago Herp. Soc. 43(10):165-166, 2008):

“Dr. Mark Mitchell is a scientist. He’s also a DVM, MS, and PhD. He received his DVM in 1992 from the University of Illinois, his MS in clinical epidemiology from the U. of I. in 1997, and his PhD in clinical epidemiology with an emphasis on salmonella in reptiles at Louisiana State University in 2001. He’s written over three hundred book chapters, peer-reviewed manuscripts, and scientific abstracts. He coauthored the *Journal of Exotic Pet Medicine* with Dr. Tom Tully, is past-president of the Association of Reptilian and Amphibian Veterinarians and currently scientific editor for that organization’s *Journal of Herpetological Medicine and Surgery*, and is coeditor of the *Journal of Exotic Pet Medicine*. From 1996 to 2007 he was a member of the zoological medicine faculty at L.S.U. In 2007 he moved back to Illinois and is currently associate professor of zoological medicine and surgery at the University of Illinois. He has studied whale sharks and black bears, marine iguanas in the Galapagos and toxoplasmosis in feral cats.”

Now go back and reread those opening quotes. Go on. I’ll wait. Yes, I did need help with that first quote. I’m grateful that I had a recording and access to Google.

I think those illustrate the talent Dr. Mitchell brings to his presentations. He shifts easily from the jargon of his specialty to the fun of entertainment. He’s a guy with a great sense of humor doing really serious work. I’m guessing that he’d be fun to have as a professor and a pleasure to work with. I know that he’s fun to hang out with. This lecture, like his previous, challenged us to expand our knowledge while making sure that we got the fundamental points. His talk was titled “Artificial Lighting for Reptiles: What Do They Really Need?” Pay atten-



Photograph by Dick Buchholz.

tion, because his talk could affect your husbandry.

Natural light is the optimal for all animals, but most of us, particularly in the north, can’t supply our animals with sufficient natural light, so artificial light has to be used. Mark, claiming that his status as a professor meant he had to ask questions, quizzed us on the three components of light. We correctly came up with ultraviolet (UV), visible, and infrared. Mark made the point that our animals need all three of these. Infrared (>700 nm) is important for temperature control, visible (400–700

nm) is important for color rendering, and UV (<400 nm) is important for vitamin D synthesis. The opening quote was a reference to the consequences of insufficient vitamin D in a rescued green iguana (*Iguana iguana*) that Dan Nathan is rehabilitating. Dr. Mitchell always takes his audience into account and uses examples in front of him to make his points.

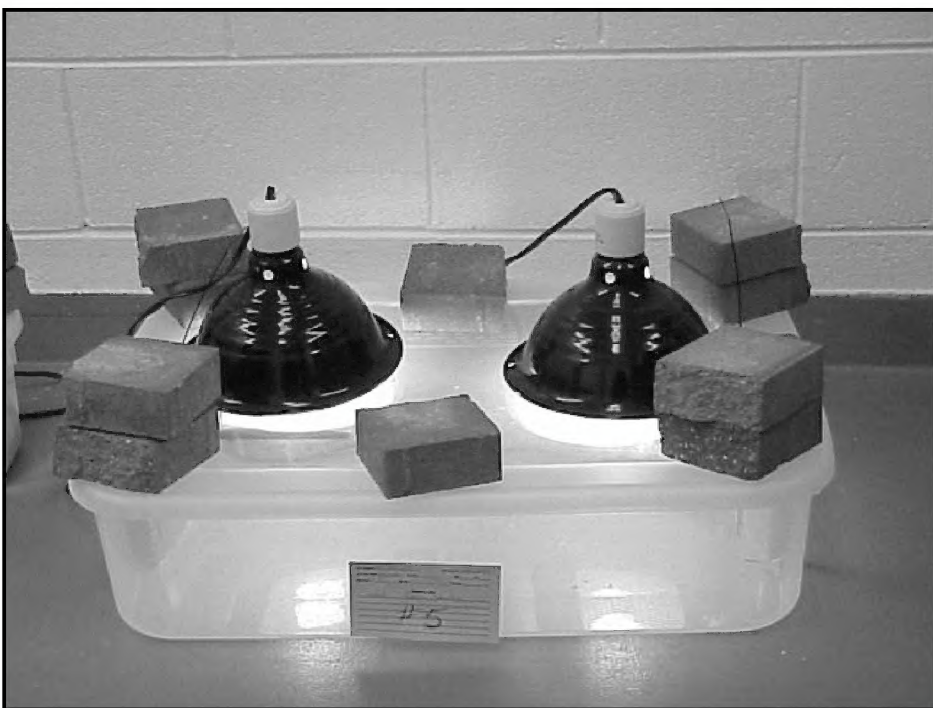
Ultraviolet radiation is usually divided into UVA, UVB, and UVC. UVC (<280 nm) acts as a germicidal, so any exposure to those wavelengths should be minimized. UVA (315–380 nm) is black light, and any benefits remain to be discovered. UVB (280–315 nm) is the range that has been demonstrated to be important for vitamin D synthesis in reptiles, specifically at 295 nm wavelength. Most specially manufactured bulbs produce a range from 290 to 300nm.

While it’s been established that lizards need UVB, Mark wanted to see if turtles or snakes were affected by exposure to radiant UVB. Animals may obtain vitamin D by ingesting it in their diet or by exposure to UVB. With another crack about tests, Dr. Mitchell threw a diagram of vitamin D synthesis onto the screen. It was one of those charts that one needs to study awhile to fully grasp, but Mark spared us that by briefly explaining the process to demonstrate that all of an animal’s bodily processes are complicated and involve many steps. By measuring one component of the process, the amount of 25-hydroxy-vitamin D circulating in the blood, one can determine the effects of UVB on vitamin D production.

For his turtle studies he set up six red-eared sliders (*Trachemys scripta*) with UVB and six without. The turtles were placed into the study as they came out of their winter torpor, their 25-hydroxyvitamin D levels (referred to as vitamin D levels from here on, because I’m not a good-enough typist to keep typing that) were measured, and then they both were fed for four weeks. Both groups started with the about the same levels of vitamin D. Both groups had an increase in their vitamin D after four weeks. The turtles not exposed to UVB in-



Set-up for Dr. Mitchell's red-eared sliders UVB experiment.



Set-up for Dr. Mitchell's corn snake experiment. One bulb is infrared, the other ultraviolet. There is mesh under the lamps because plastic would block the UV.

creased about 300% (probably from their diet), but those that could bask under the UVB had close to a 700% increase.

Mark moved on to his work with Blanding's turtles (*Emydoidea blandingii*). He's helping the head-start program in DuPage County that Dan Thompson spoke about in January (Bull. Chicago Herp. Soc. 44(2):28-29, 2009)). He showed a picture of a juvenile with pyramiding. Multiple causes have been proposed for this shell anomaly and Dr. Mitchell said that it's likely a combination of factors, one of which might be insufficient vitamin D. He ran a similar experiment to test the effects of UVB on Blanding's. These animals were divided into two groups and for six months all were exposed to infrared light and half were also exposed to UVB. At the end of six months the turtles exposed to UVB had nearly six times the amount of vitamin D of those unexposed, but still had only about the same level as the unexposed red-eared sliders after four weeks. Whether shell color, different basking behaviors, or simply different responses of species needs to be left for further study.

Mark then turned to snakes. Snakes allowed him to eliminate diet as a variable, for while a snake can be fasted for a month, it's difficult to subject turtles to such a regimen. The corn snakes (*Pantherophis guttata*) were divided into two groups



Head-started Blanding's turtle showing pyramiding of carapace.

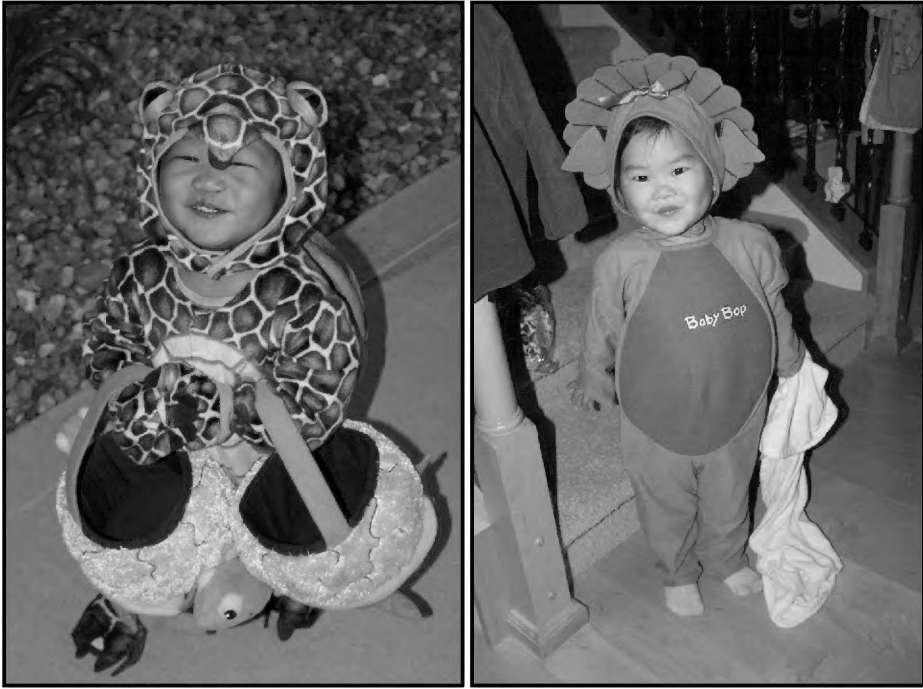


The result of too much UVB—photokeratoconjunctivitis. Removing the too-bright light will usually reverse this condition.

of six, and one group was exposed to UVB for a month. The exposed snakes had nearly three times the amount of vitamin D.

Dr. Mitchell's results show only that exposure to UVB increases vitamin D in these three species. Whether the increase helps the animal is still unknown. What amount of vitamin D is required and does it vary among species? How much is too much vitamin D? The answers to these questions probably vary between orders of animals and species. More work needs to be done, but Mark had suggestions as to lighting your animals.

Mimicking natural photoperiods is the best answer, but no longer than 12–14 hours. Dr. Mitchell stressed the importance of photoperiods, saying that he suspects that the increase in human mental health problems may be related to artificial extending our daylight. Remember the second quote at the beginning of this article? That was Mark's method of reinforcing how adaptable reptiles are to changing temperatures. He took temperatures of iguanas in El Salvador in July. At noon the animals' body temperatures measured 120°F and at midnight they measured 75°F. Reptiles are made to handle fluctuations in body temperature that would certainly kill mammals. He suggested letting your animals cool at night. He warned against too much UVB. Apparently the 10.0 bulbs out now can



Two small humanoids that Dr. Mitchell claims he's trying to turn into reptiles. His son is almost three and his girl is almost four. You can't help but like someone who puts these pictures in his presentation.

cause problems as can the metal halide bulbs. For UVB he likes either the 23-watt Fluker's or ZooMed's 5.0 compact fluorescent bulbs. For visible light he likes tube fluorescents with a color rendering index (CRI) of 88 or greater. For infrared anything that produces heat will do. Most glass and plastic blocks all transmission of UVB, and mesh will degrade the transmission of radiant energy, so be aware of what light is actually hitting your animal. UVB meters are available to measure UVB light.

Mark stayed and answered questions and then joined the group for dinner afterward. I, unfortunately, could not join them for dinner, but I hope that I get to see Mark again. He's a great speaker, with a vet's consideration for the care of our animals and a scientist's desire to find the answers. I know that all the

answers aren't in, but I'm certainly changing my husbandry methods. Here's a site I've found on the internet that explores UVB and reptiles' needs: <http://www.uvguide.co.uk/>. Parts of the site are a bit outdated, but it seems to be unbiased and will tell you more than you want to know about UVB. And here's a link to the company that produces UVB meters: <http://www.solarmeter.com/model62.html>. Model 6.2 is the one you want, and you may be able to find it cheaper. I didn't do a search for lower prices. What, you want me to do all the work? But before you buy it, we may have them for borrowing from the library soon. One more benefit of membership.

The Midwest Herpetological Symposium for 2009 is being hosted by your society. It's October 9–11. Your registration allows you a discounted entry to the NARBC show on Sunday for only \$5. Registration is only \$85. Saturday night banquet is \$35 (followed by an auction that is great fun and helps fund the CHS grants program). If you want a hotel room, reserve early to get our rate of \$94.99. Jason Hood (jhood@chicagoherp.org) is putting it together. He probably needs help. Go to the web site (<http://www.chicagoherp.org/mhs/>) for more info. Sign up! You do not want to miss this.

Lastly, the board elections are coming in November. If you'd like to be treated like a goddess (or god), enjoy people looking at you with reverence, love having your every wish catered to, and don't care to mix with the peasants, then don't run for the board. But if you want to steer the course of this society, associate with some really fine individuals, and get more involved in a lot of fun (and, honestly, a few not-so-fun) activities, get your name to Jim Foster (jwf2166@comcast.net), chairman of the nominating committee. You need to do it soon so you can get on the ballot. We need you, and you're going to have a lot of fun. Email him, right now.

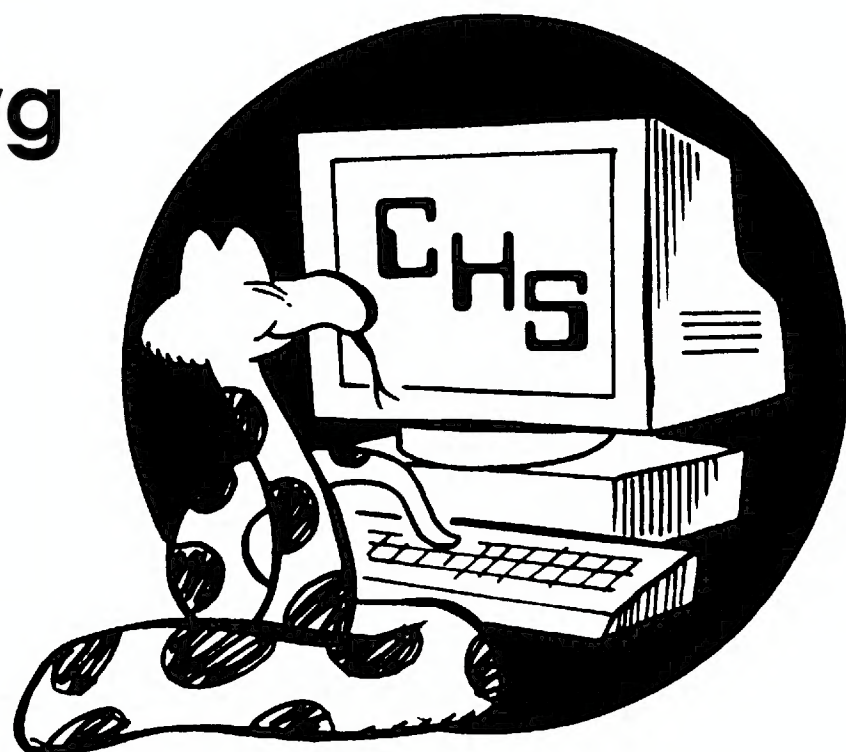
Next time you surf the WorldWide Web, crawl, run, slither, slide, jump, or hop over to the CHS web site!

www.chicagoherp.org

You'll find:

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- **CHS animal adoption service**
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Unofficial Minutes of the CHS Board Meeting, August 14, 2009

The meeting was called to order at 7:35 P.M. at the Schaumburg Public Library. Board members Dan Bavirsha, Deb Krohn, Aaron LaForge, Cindy Rampacek and Brad Trost were absent.

Officers' Reports

Recording Secretary: John Archer read the minutes of the July 17 board meeting. Corrections were made, and the minutes were accepted.

Treasurer: Andy Malawy presented the July financial reports and no questions were raised.

Membership Secretary: Mike Dloogatch reported that membership is holding steady, and read a list of memberships expiring this month.

Publications Secretary: Aaron LaForge was absent. John Archer reported for him that the online membership form is up, and the vet list is currently on hold. Aaron also wanted to thank everyone who came up to SEWERFest. Attendance was up, they had over 700 people through the door.

Sergeant-at-arms: Attendance at the July meeting was about 55.

Committee Reports

Shows:

- Central Stickney Park District Family Fest, August 15.
- Emily Oaks Nature Center, November 15.

Dick Buchholz and the Woolridge family did a herp display for two large groups of Girl Scouts in Harvard.

Adoptions: Linda has boas, leopard geckos, multiple tortoises and other animals on her available list.

Old Business

Symposium 2009: Jason gave speaker updates. The website is looking really good. Mike will include registration inserts in the August *Bulletin*. Jason needs a write-up to send to other societies.

Meeting Rules: Jason made a comprehensive announcement at the July meeting. Written rules are being worked on.

New Business

There is "No Child Left Inside" legislation in the works. We will look into any possible connection for the CHS.

The Massasauga rattlesnake population in the Carlyle area is being threatened by the addition of a 10-foot-wide asphalt bike path in an area which the snakes use for hibernation and gestation. Options discussed included sending a letter and a FOIA request to the Army Corp of Engineers, who are spearheading the project.

Round Table

Linda—The CHS would like to extend condolences to the family of Jim Gaspar, a longtime member of the society who passed away August 7.

Jason—reported several interesting stories about Burmese python hunting in Florida.

Mike D.—Back issues of our *Bulletin* and the *Journal of Herpetology* were sold through our classifieds. Several of our members were recently on a trip to Arizona, and stopped at Bob and Sheri Ashley's new Chiricahua Desert Museum. It is definitely worth seeing!

The meeting adjourned at 9:15 P.M.

Respectfully submitted by Jenny Vollman for recording secretary Cindy Rampacek



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HERP-ACROSTIC #20 by Mike Dloogatch

1 C	2 H	3 Z ₁	4 K		5 E		6 L	7 Z ₂	8 V	9 W	10 I		11 O	12 K	13 C	14 V	15 N	16 W	17 F		18 K	19 J	20 D	21 O
22 A	23 W		24 X	25 V	26 Z	27 P		28 X	29 H	30 S	31 V	32 G		33 Z ₁	34 T	35 I	36 R		37 N	38 C	39 A		40 Q	41 C
42 X	43 Z	44 O	45 Z ₁	46 U	47 H	48 T	49 E	50 W	51 D	52 S		53 Q	54 A	55 H		56 K	57 B	58 L	59 C		60 X	61 Z	62 I	63 J
64 K		65 T	66 O		67 X	68 A	69 E	70 O		71 O	72 R	73 I	74 V	75 W		76 F	77 C	78 Q		79 L	80 G	81 M	82 X	83 K
	84 H	85 X	86 M	87 E	88 J	89 L	90 Z ₂	91 W		92 Y	93 Z ₂	94 K	95 U	96 D		97 X	98 E	99 N		100 J	101 O	102 K		103 P
104 Z ₁	105 Z	106 U	107 V	108 H	109 P	110 R	111 C		112 F	113 D	114 J	115 E	116 K	117 V		118 X	119 S	120 F		121 A	122 R	123 B	124 G	125 K
	126 T	127 R	128 U	129 O		130 M	131 I	132 O	133 R	134 C	135 V		136 Z ₂	137 Q	138 X	139 E		140 N	141 W	142 Q	143 S	144 V		145 X
146 V		147 I	148 L	149 E	—	150 W	151 P	152 K	153 V		154 V	155 Z	156 G	157 R	158 L	159 B	160 N	161 Z ₂	162 Z ₁		163 H	164 X		165 D
—	166 W	167 E	168 A	169 Q	170 K	171 N		172 Y	173 M	174 E	175 V		176 A	177 D	178 X	179 C	180 H		181 A	182 T	183 U	184 H	185 D	186 Z ₁
187 J	188 B	189 Y		190 A	191 Q	192 J	193 O	194 V	195 Y	196 G		197 W	198 E	199 N		200 U	201 Z ₂	202 I	203 Q		204 Z	205 P	206 I	207 B
208 Z ₁		209 K	210 F	211 D	212 H	213 S	214 W		215 V	216 H	217 K		218 P	219 B	220 Z ₁	221 U								

How to solve this puzzle: The diagram, when filled in, will contain a quotation from a published work on herpetology. The numbered squares in the diagram correspond to the numbered blanks under the WORDS. The letter at the upper right of each square indicates the WORD containing the letter to be entered in that square. The WORDS form an acoustic: taking the first letter of each in order spells out the name of the author and the title of the work from which the quotation is taken.

CLUES	WORDS
A. _____ snake, <i>Coluber</i> (or <i>Masticophis</i>) <i>flagellum</i> .	181 22 54 176 121 39 68 168 190
B. The Snake and the Alligator, for instance.	188 219 57 207 159 123
C. Author in 1967 of <i>A Contribution to the Classification of Snakes</i> (last name only).	13 77 111 38 59 1 134 41 179
D. Author in 1982 of <i>The Care of Reptiles and Amphibians in Captivity</i> (last name only).	113 177 51 165 20 96 211 185
E. Botanist who claimed to have shot an 18½' boa constrictor in Trinidad (last name only).	87 5 174 139 69 198 149 98 49 115 167
F. _____ giant salamander, <i>Dicamptodon aterrimus</i>	112 17 76 210 120
G. Some frogs build them of foam.	124 156 32 80 196
H. Like <i>Phrynosoma douglasi</i> and <i>Phrynosoma hernandesi</i> (hyphenated)	180 108 47 212 84 2 163 29 216 184 55
I. Brand name for many reptile-related products (two words)	73 206 131 10 202 147 35 62
J. _____ treefrog, <i>Hyla wrightorum</i> .	187 63 88 192 19 100 114
K. _____, <i>Notophthalmus viridescens viridescens</i> (two words, one hyphenated).	83 152 64 209 18 94 170 12 56 217 4 116 102 125
L. _____ snakes, genus <i>Ninia</i> .	89 79 158 6 148 58
M. _____ snake, legendary creature of the southeastern U.S.	81 86 173 130
N. Illegally in front of the puck or ball.	160 37 140 171 15 199 99
O. Author in 1930 of <i>Pythons and Their Ways</i> (last name only)	66 132 71 193 21 44 70 101 129 11
P. _____ skinks, genus <i>Plestiodon</i>	218 109 205 27 103 151
Q. Like a particular subspecies of milksnake.	53 142 203 78 191 169 137 40
R. _____ viper, <i>Bothriechis schlegelii</i>	157 36 127 110 122 133 72
S. _____ cornsnake.	143 119 30 52 213
T. _____ copperhead, <i>Agkistrodon contortrix phaeogaster</i> .	65 126 182 48 34
U. Like all caecilians, for instance.	183 128 95 46 200 106 221
V. _____ whiptail, <i>Aspidoscelis uniparens</i> (two words).	14 107 74 175 8 154 31 146 215 117 144 194 25 135 153
W. Defining characteristic of the genera <i>Cophosaurus</i> and <i>Holbrookia</i> .	150 197 141 91 75 50 166 23 16 214 9
X. _____ siren, <i>Pseudobranchius striatus</i> (two words).	164 145 138 67 60 82 178 42 24 118 97 85 28
Y. Marshes.	92 195 172 189
Z. _____ boas, genus <i>Charina</i> .	155 105 204 43 61 26
Z ₁ . Too much of a good thing (also, too much of a bad thing).	104 33 220 208 186 45 162 3
Z ₂ . Heavy with young.	161 93 90 201 7 136

Advertisements

For sale: rats and mice—pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, 6115 SW 137th Avenue, Archer FL 32618, (352) 495-9024, E-mail: GrmtRodent@aol.com.

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For sale: **high quality frozen feeders**. Over a decade of production and supply. Seven sizes of mice available: small newborn pinks up to jumbo adults. Prices start at \$25 per 100. Feeders are separate in the resealable bag, not frozen together. Low shipping rates. Free price list. Kelly Haller, 4236 SE 25th Street, Topeka KS 66605, (913) 234-3358 evenings and weekends.

For sale: Rats—live or frozen. I breed rats for my collection of boas so only top quality lab chow and care will do, I'm now offering surplus animals for sale. Located in far south suburbs of Chicago. Only orders of 20 or more please, no large rats will be available. For current availability and prices, please e-mail Steve at smuys@sbcglobal.net.

For sale: Australia herp books. G. M. Storr, L. A. Smith and R. E. Johnstone, *Lizards of Western Australia. Vol. 1—Skinks*, 1981; 200 pp., 20 plates with 6–8 color photos each, drawings, range maps, keys, description, derivation of scientific name, (s); *Lizards of Western Australia. Vol. 2—Dragons and Monitors*, 1983, 113 pp., 20 plates with 2–8 color photos each, drawings, range maps, keys, description, derivation of scientific name, (s); *Snakes of Western Australia*, 1986; 187 pp., (s). All 3 of these books have 20–24 plates with 1 to 8 color photos each, with drawings, range maps, descriptions, distributions, derivation of scientific names, extensive bibliographies, \$38 each or \$98 for all three. Stephen K. Wilson and David G. Knowles, *Australia's Reptiles—A Photographic Reference to the Terrestrial Reptiles of Australia*, 1988, 447 large (8 × 11½ ") pp., 847 color photos, drawings, range maps, descriptions, taxonomy, habitats, habits, extensive bibliography, text based on field work by authors throughout Australia, DJ, (h) excellent condition, \$130; Raymond T. Hoser, *Australian Reptiles & Frogs*, 1989, 238 8½ × 11½" pp., 631 color photos of herps and their habitats, range maps, bibliography, info on captive husbandry, conservation, reptile photography, DJ; (h), \$135; A. John Coventry and Peter Robertson, *The Snakes of Victoria*, 1991, 70 pp., many color photos, range maps, 6 figs., descriptions and natural history info, published by Museum of Victoria (Australia), (s), \$35; Eric Worrell, *Australian Snakes, Crocodiles, Tortoises, Turtles, Lizards*, 1967 (1966), 64 pp., many b&w and color photos, photo of Worrell milking a taipan on page 52, (h), \$22. h = hardbound; s = softbound. Prices are in \$US. All books in very good to excellent condition unless otherwise indicated. Books offered subject to prior sale. Orders for \$25 or more sent postpaid in the U.S.; \$3.00 postage and handling in the U.S. for orders under \$25. William R. Turner, 7395 S. Downing Circle W., Centennial, CO 80122; telephone (303) 795-5128; e-mail: toursbyturner@aol.com.

For sale: Trophy quality jungle carpet, diamond-jungle, and jaguar carpet pythons. Website: moreliapython.googlepages.com E-mail: junglejohn@tds.net

For sale: Will soon have Malagasy cat-eyed snakes, *Madagascarophis*, four clutches, total of 24 eggs, all looking good. These are from several females of different colors. We were not able to get locality data on the adults. All are long-term and several young are over a year old. Asking \$200 each or \$250/pair. If interested, call Dave at (903) 769-9314. I will return any and all calls as soon as possible.

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2009 Midwest Herpetological Symposium October 9-11



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Animal Planet's E-vets

Bob Henderson

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Milwaukee Public Museum

Jeff Lemm

Institute for Conservation Research
San Diego Zoo

Bill Peterman

Doctoral Candidate
University of Missouri

Gregory J. McConnell

Professor of Biology
Emory and Henry College

Zoltan Takacs

Assistant Professor
University of Chicago

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Amphibian Conservation Scientist
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and one other TBA



Registration fee: \$85.00

Optional Saturday Night
Banquet: \$35.00

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Schedule of Events

5:00 p.m. Friday registration

7:30 p.m. Friday talks begin

7:30 a.m. Saturday
registration

8:00 a.m.- Saturday talks
5:00 p.m.

7:00 p.m. Saturday banquet
and auction

10:00 a.m. Sunday early VIP
admission to
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UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, September 30, at the Peggy Notebaert Nature Museum, Cannon Drive and Fullerton Parkway, in Chicago. **Dr. Kathryn Tosney** will speak on “How Human Selective Breeding Has Changed Australian Bearded Dragons.” Dr. Tosney spent many years on the faculty at the University of Michigan in Ann Arbor, and is a long-time member of the Michigan Society of Herpetologists. She is now professor of biology and chair of the Biology Department at the University of Miami in warm and herp-rich Florida.

At the October 28 meeting **Matt Goode**, a research scientist at the University of Arizona in Tucson, will speak on “Ecology and Conservation of the King Cobra (*Ophiophagus hannah*) in the Western Ghats of India.” Matt and his co-workers used radiotelemetry to conduct the first-ever study of wild king cobras in the Western Ghats of India, near Agumbe Rainforest Research Station, in the district of Shimoga, state of Karnataka. Matt will discuss the results in the context of ongoing conservation concerns, emphasizing potential effects of habitat fragmentation, and translocation of snakes “rescued” from human habitations.

The regular monthly meetings of the Chicago Herpetological Society take place at Chicago’s newest museum—the **Peggy Notebaert Nature Museum**. This beautiful building is at Fullerton Parkway and Cannon Drive, directly across Fullerton from the Lincoln Park Zoo. Meetings are held the last Wednesday of each month, from 7:30 P.M. through 9:30 P.M. Parking is free on Cannon Drive. A plethora of CTA buses stop nearby.

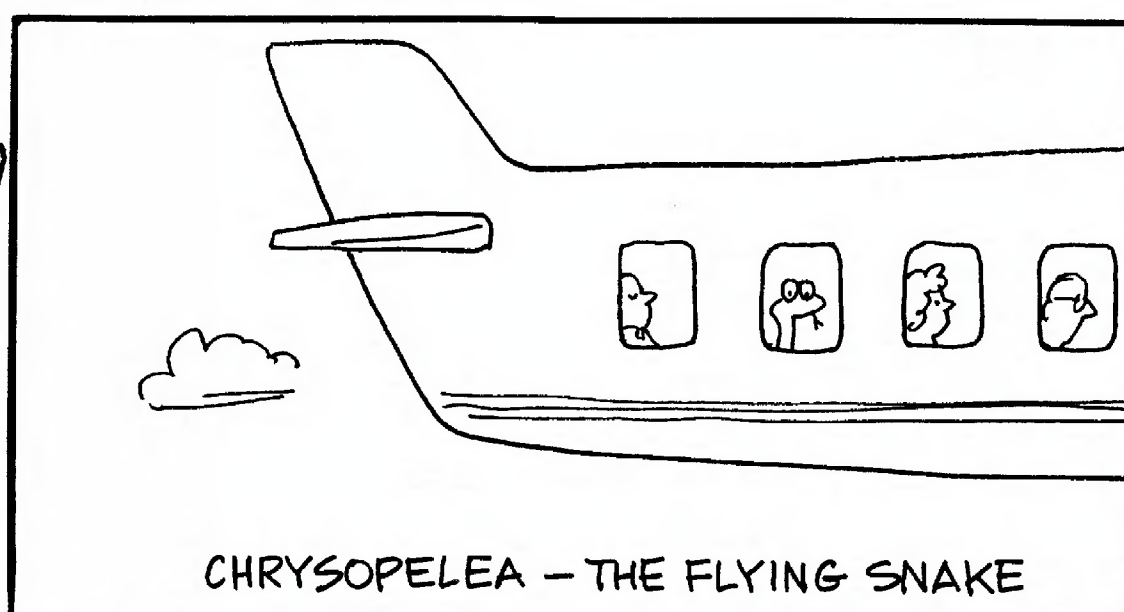
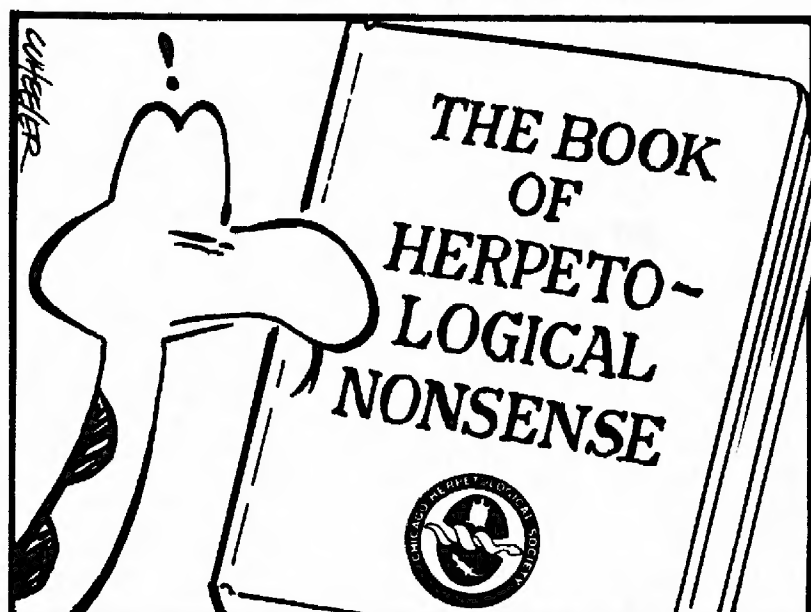
Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? If so, mark your calendar for the next board meeting, to be held at 7:30 P.M., October 16, in the adult meeting room on the second floor of the Schaumburg Township District Library, 130 S. Roselle Road, Schaumburg.

The Chicago Turtle Club

The monthly meetings of the Chicago Turtle Club are informal; questions, children and animals are welcome. Meetings normally take place at the North Park Village Nature Center, 5801 N. Pulaski, in Chicago. Parking is free. For more info visit the CTC website: <http://www.geocities.com/~chicagoturtle>.

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